

Innovative Approaches to Risk Communication

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Imagine

- Suppose U.S. EPA officials, state biologists, local science teachers, and community groups routinely asked one another:

“When you think about our city or county, what environmental issues concern you the most?”

- What would have to change for these sorts of conversations to become routine?

Dollie Burwell, Susanna Haas Lyons

- Susanna, Dollie will described ways for earning confidence.
- Earth Day offers annual opportunities for conversation about the environment.
- But many avoid thinking about “stigmatized” or negative topics such as local landfills, toxic dumps, fights over expensive clean ups.
- Fortunately, local schools, colleges, and universities offer opportunities for innovation.

The “CAUSE” Model

- This presentation describes innovative ways to encourage community involvement by:
 - Using the “CAUSE” risk communication model to think about your challenges.
 - Partnering with local schools and colleges.
 - Realizing that there are no magic words, but there are effective ways to communicate.

Five Barriers to Communicating Risk: The “CAUSE” Model

C – lack of confidence in partners
(community, EPA, local govt)

A – lack of awareness of harm, solutions,
structure of government

U – lack of deep understanding

S – lack of satisfaction with solutions

E – lack of enactment or change

(Rowan, 1991, 1994; Rowan et al., 2003)

Using CAUSE:

Select Goal(s)

- Easy or difficult communication goals?

Goal	Challenge		
	Easy	Difficult	Very Difficult
Creating Awareness	<input checked="" type="checkbox"/>		
Earning Confidence, Deepening Understanding		<input checked="" type="checkbox"/>	
Gaining Satisfaction, Motivating Enactment			<input checked="" type="checkbox"/>

Using “CAUSE” to Innovate

■ Ask yourself:

- Is your challenge MAINLY resulting from lack of *confidence* in your communication partners, lack of *awareness, understanding* of the hazard, etc.?
- Identify research, best practices in government, business, non-profit arenas, that address each challenge.
- Let's start with the Puddingland site challenge.

Puddingland, Va., Drum Dump Site

- **Your Challenge:** At meeting, residents more worried about well water than site. EPA realizes private wells COULD be contaminated but clean up NOT EPA's job.
- **Research on “earning confidence” says:**
 - Government, pollution both plagued by “stigma.” To address:
 - Get acquainted. Listen.
 - Make actions “monitor-able” by many.

Earning Confidence

- Possible approaches to Puddingland site:
 - Empathize. Acknowledge frustration.
 - Help in small ways if not large ones. Offer numbers for locals who can address well water.
 - Encourage listening using “AmericaSpeaks” techniques.
 - Be monitor-able. Report progress.

Earning Confidence (cont'd)

- Visit and listen one-on-one prior to meeting.
- Partner. Could County officials attend this meeting?
- Recruit local “co-investigators”: student science projects, water quality officials, community leaders to do research, write reports.
- When data analyzed, co-investigators might offer “guided tours” testing well and site water quality for media, public officials, etc.

Creating Awareness of Hazards

- **Your challenges:** Alerting vulnerable groups quickly during crises. Alerting non-English speaking groups to floods, contaminated soils.

Research says:

- Create awareness through REPITITION of key message. Find low cost ways to send message repeatedly through radio, grocery stores, local officials, media, school projects, phone trees.
- Locate vulnerable via social services, churches.

Lead Poisoning

- **Your Challenge:** Deepening understanding of under-estimated hazards (e.g., lead, radon).

Sample Context

Superfund Site: lead contamination. EPA cleaned up but All-Terrain Vehicles (ATVs) destroying clean soil and exposing contaminated soil. Lead concentrations as high as 20,000 ppm. Site is great risk, but City does not have resources to enforce no-trespass rule. Community members do not alert City to ATVs for fear of vengeance.

Lead Poisoning (cont'd)

- Lead can lead to cognitive deficits. It interferes with neurotransmitters essential for impulse control and the suppression of violent behavior
(Pekkanen, 2006)
- *Puzzle:* Assume some in community trust you but lack understanding of danger of lead in soil. How do you deepen understanding?

Lead Poisoning (cont'd)

- Lead is a neurotoxin dangerous to developing brains. **Sixteen percent** of poor children living in older housing have elevated blood lead levels (Landrigan, et al., 2002).
- Use of lead-based paint peaked in the 1920s; leaded gasoline in the 1970s (Mielke, 1999).

Photo, Mielke, *American Scientist*, 1999.



Deepening Understanding

- To explain science, “diagnose” THREE frequent sources of confusion (Rowan, 1999):
 - **Familiar concepts not well understood?** e.g., words such as environmental, lead, toxic, emission versus exposure.
 - **Complexities hard to envision?** e.g.; why lead is so harmful to child’s brain development; quantitative depictions of risk.
 - **Hard-to-understand because counter-intuitive?** e.g., that something we cannot see like radon gas in home or lead dust in yard may be harming us.

Familiar Word Misunderstood?

Clarify Intended Meaning

Example: Explain “exposure.”

- Do not just define. Say what the word does not mean and say what it does mean.

Emission means “release” into the environment. In contrast, exposure means “contact.”

- Give a range of examples of “exposure” not just one example.

You are exposed to a substance if you eat, touch, or inhale it. Exposure is measured with blood samples; emissions by pounds.

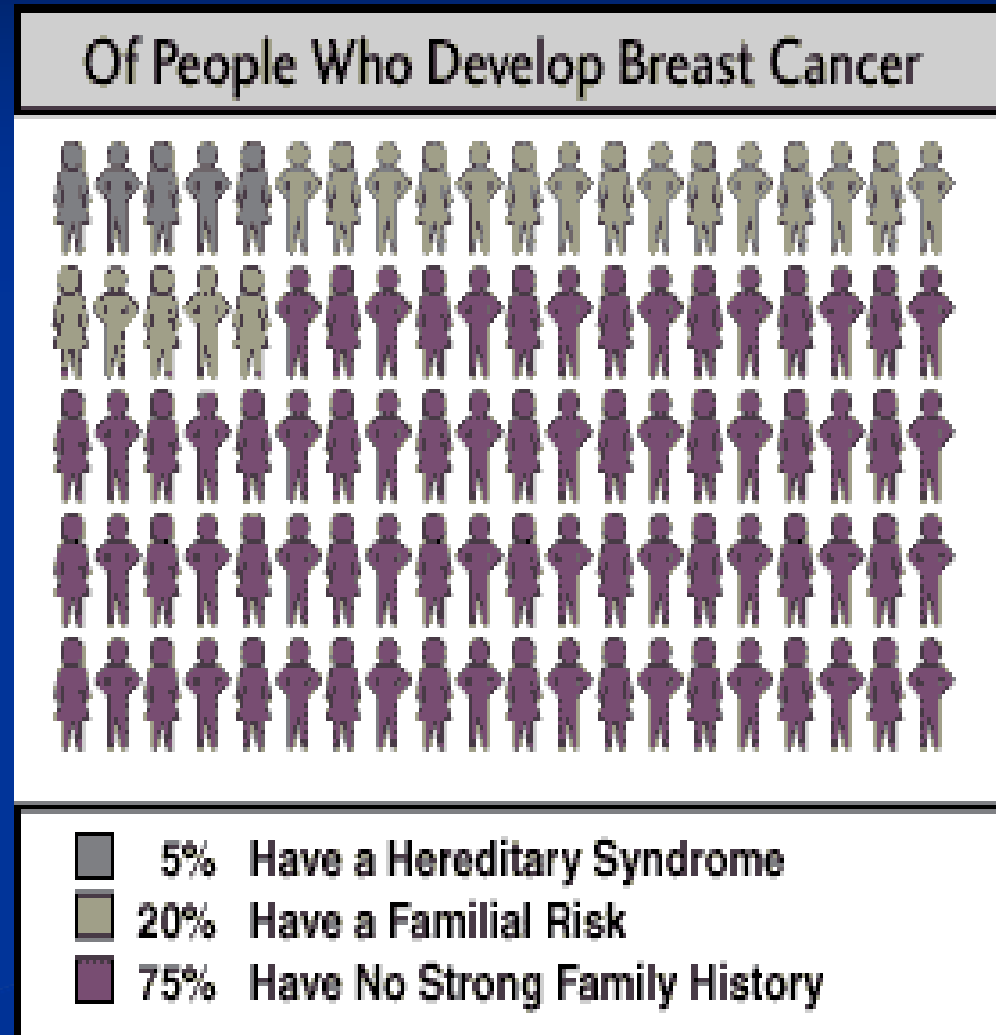
Numbers Complex?

Promote Visualization

- Research shows many struggle to understand risk numbers (Schwartz et al., 1999).
- No format is entirely neutral (Peters, et al., 2007).
Therefore, present risk information in several formats:
e.g., narratives of several outcomes, frequencies,
graphics depicting frequencies, graphics depicting
processes.
- Ask, “*What’s the best way for you? Do you learn by hearing a tape, watching a movie, or with pictures?*” (Davis et al., 2002)

Promote Visualization (cont'd)

Here are two versions of the same information: pictograph and percents (See Danziger, 2000; also Schwartz et al., 1999)



Difficult to Believe?

Address Lay Theories

- People have “lay theories” about familiar aspects of life --- disease, sex, environment, etc.
- Research on lay theories began in physics education (e.g., Hewson & Hewson, 1983)
- Examples of erroneous lay theories:
 - If I cannot see it, it's not hurting anything.
 - If I get prostate cancer, I will die right away.
 - There's no cancer in my family so I won't get it.

Address Lay Theories

- **State the lay theory and acknowledge its apparent reasonableness**
 - The dirt near our homes may not seem dangerous.
- **Create dissatisfaction with the lay theory**
 - Lead in gasoline was not outlawed until the 1970s. Homes near busy roads may be laden with lead dust. Older homes may have lead paint on walls. When inhaled or eaten, lead harms the brain.
- **Explain the orthodox science**
 - Children living in older homes or in homes near busy roadways may be exposed to lead and their brains affected. Contact health officials to get children tested.

Recommended Research

- Brochures, web sites, videos can be analyzed for the effectiveness of their explanatory text and visuals (Witte et al., 2001).
- Explanatory materials can also be assessed using Morgan et al. (2002) “mental models” approach which asks people to “think-aloud” as they read a text.
- Test messages for clarity and impact.

Summary

- Think about CAUSE to analyze challenges.
- Use the sources listed at the end of these slides.
- Contact local schools, universities. Encourage communication and science teachers and students to work together on risk communication challenges in your area.
- Innovation and effectiveness most likely when we partner.

References

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